

WHAT IS CLAIMED IS:

1. A photodetector for, when light emitted from a two-wavelength light source is divided into at least three light components to be reflected by an optical recording medium, detecting the reflected light components, the photodetector comprising:

5 a first detector divided into eight for detecting the three light components reflected by the optical recording medium to convert the light components into electrical signals;

a first calculating portion for calculating a first tracking error signal from the electrical signals converted by the first detector by a differential push-pull method;

10 a second calculating portion for calculating a first focusing error signal by an astigmatism method and a second tracking error signal by a differential phase detection method from the electrical signals converted by the first detector;

a second detector divided into four, for detecting the three light components reflected by the optical recording medium to convert into the light components into electrical signals; and

15 a third calculating portion for calculating a second focusing error signal by the astigmatism method and a third tracking error signal by the differential phase detection method from the electrical signals converted by the second detector.

2. The photodetector according to claim 1, wherein the first detector comprises:

20 a first central sensor having a region divided vertically and horizontally into four sub regions, for detecting the central light component among the at least three light components reflected by the optical recording medium to convert the central light component into an electrical signal;

a first peripheral sensor having a region divided vertically or horizontally into two sub regions, for detecting a first peripheral light component among the at least three light components reflected by the optical recording medium to convert the first peripheral light component into an electrical signal; and

5 a second peripheral sensor having a region divided vertically or horizontally into two sub regions, for detecting a second peripheral light component among the at least three light components detected by the optical recording medium to convert the second peripheral light component into an electrical signal.

10 3. The photodetector according to claim 1, wherein the optical recording medium is one among a DVD-R, a DVD+RW, a DVD-RW, and a CD.

4. The photodetector according to claim 3, further comprising a switching portion for selectively outputting either the first tracking error signal or the second tracking error
15 signal in accordance with the kind of the optical recording medium.

5. The photodetector according to claim 4,
wherein the switching portion selectively outputs the first tracking error signal calculated by the first calculating portion when the optical recording medium is one among
20 the DVD-R, the DVD+RW, and the DVD-RW, and

wherein the switching portion selectively outputs the second tracking error signal calculated by the second calculating portion when the optical recording medium is the DVD-ROM.

6. The photodetector according to claim 3, wherein the third calculating portion calculates the second focusing error signal and the third tracking error signal when the optical recording medium is the CD.